

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (currently amended) An isolated and purified nucleic acid molecule that encodes a mammalian histamine H4 receptor protein, said nucleic acid molecule comprising a member selected from the group consisting of:
  - (a) ~~a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 390 of SEQ ID NO:2;~~
  - (b) ~~a nucleic acid molecule which is complementary to the polynucleotide of (a);~~
  - (c) ~~a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (a) or (b);~~
  - (d) ~~a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (a);~~
  - (e) ~~a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 391 of SEQ ID NO:8;~~
  - (f) ~~a nucleic acid molecule which is complementary to the polynucleotide of (e);~~
  - (g) ~~a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (f) or (e);~~
  - (h) ~~a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (e);~~
  - (i) (a) ~~a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 391 of SEQ ID NO:9;~~
  - (i) (b) ~~a nucleic acid molecule which is complementary to the polynucleotide of (a)~~

(k)(c) a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (a) or (b)-(i) or (j); and

(l) (d) a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (a)-(i);

(m) — a nucleic acid molecule ~~encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 389 of SEQ ID NO:10;~~

(n) — a nucleic acid molecule ~~which is complementary to the polynucleotide of (m);~~

(o) — a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (m) or (n); and

(p) — a nucleic acid molecule that hybridizes ~~under stringent conditions to the polynucleotide molecule of (m).~~

2. (original) The nucleic acid molecule of claim 1 wherein the polynucleotide is RNA.

3. (original) The nucleic acid molecule of claim 1 wherein the polynucleotide is DNA.

4. (currently amended) The isolated and purified nucleic acid molecule of claim 1, having a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), and (SEQ ID NO:7).~~

5. (original) The isolated and purified nucleic acid molecule of claim 1, wherein said nucleic acid molecule is genomic DNA.

6. (currently amended) An expression vector for expression of a mammalian histamine H4 receptor protein in a recombinant host, wherein said vector contains a nucleic acid sequence encoding a mammalian histamine H4 receptor protein having an amino acid sequence of SEQ ID NO:9.

7. (currently amended) The expression vector of claim 6, wherein the expression vector contains a nucleic acid molecule encoding a mammalian histamine H4 receptor protein having a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), or (SEQ ID NO:7).~~

8. (currently amended) The expression vector of claim 6, wherein the expression vector contains genomic DNA encoding a said mammalian histamine H4 receptor protein.

9. (currently amended) A recombinant host cell containing a recombinantly cloned nucleic acid molecule encoding a mammalian histamine H4 receptor protein having an amino acid sequence of SEQ ID NO:9.

10. (currently amended) The recombinant host cell of claim 9, wherein said nucleic acid molecule has a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), and (SEQ ID NO:7).~~

11. (original) The recombinant host cell of claim 9, wherein said cloned nucleic acid molecule is genomic DNA.

12. (currently amended) A substantially pure histamine H4 receptor encoded by the nucleic acid molecule of claim 1 protein in substantially pure form that functions as mammalian histamine H4 receptor protein.

13. (currently amended) The protein according to claim 12, having an amino acid sequence ~~selected from a group consisting of: (SEQ ID NO:2), (SEQ ID NO:8), (SEQ ID NO:9), and (SEQ ID NO:10).~~

14-15. (canceled)

16. (original) A process for expression of mammalian histamine H4 receptor protein in a recombinant host cell, comprising:

- (a) transferring the expression vector of Claim 6 into suitable host cells; and
- (b) culturing the host cells of step (a) under conditions which allow expression of the mammalian histamine H4 receptor protein from the expression vector.

17-25. (canceled)